"EFFICIENT STORAGE GUIDE" VIDEO VOICE TRANSCRIPTION

Voice over: "A system with a high penetration of renewable energy may be subject to significant fluctuations in its production since the wind and the sun are variable and will require other technologies to provide flexibility and firmness to the system."

"Storage has the potential to provide flexibility and firmness as it can respond quickly whenever variations in renewable production occur. Storage allows to capture excess energy while demand is low and to supply stored energy when demand rises."

"Since not all storage technologies provide the same solutions to the system, it is important to use the most efficient option at any given time. In a nutshell:

- Hydroelectric pumped storage stores water in a reservoir which subsequently flows through a turbine to produce electricity. This is the most efficient large-scale alternative as it provides the greatest storage capacity for the longest period of time. It is a mature technology, capable to transfer excess production to a later day, week or even month.
- Batteries can only store energy for hours. They have proven their feasibility in certain situations requiring short-term flexibility, although their technology has not yet reach full maturity and requires further development to improve its competitiveness. Its modularity and ease to build, allows their use in customised solutions.
- Hydrogen storage involves producing and storing hydrogen using surplus renewable energy. This is a promising solution for specific situations, although the technology is still at an early stage and there is much uncertainty regarding large-scale production and competitiveness."

"Pumped storage is currently the only technology that is both technically and economically viable for mass commercial usage, costing four to five times less than batteries or hydrogen. By 2030, significant technological improvement is expected for the less mature alternatives, leading to a reduction in storage costs by an estimated 50 % for batteries and 25 % for hydrogen. Nevertheless, pumped storage is likely to still remain the most affordable option."

"Iberdrola is a leader in pumped storage, boasting a capacity of 4,500 MW including installed and under construction facilities."